

**First Year Wetland Mitigation Site Monitoring for the Tamms Site,
FAS 1907 (IL 127), Alexander County, Illinois – 2004**

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Introduction

Wetland compensation activity has been initiated along Illinois Route 127, one mile north of Tamms, Alexander County, Illinois. The legal location of the site is NE $\frac{1}{4}$ of the NW $\frac{1}{4}$ and the SE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 31, T. 14 S., R. 1 W. (Mill Creek, IL Quad). This site is mitigation for wetland impacts [0.704 ha (1.739 ac)] incurred during the widening of IL 127 in Union and Alexander counties. The total mitigation required for this project is 1.750 ha (4.325 ac). Prior to wetland construction this mitigation site was mostly in row crops with some abandoned railroad embankments (IDOT Wetland Conceptual Plan). This site is located within the Bottomlands Section of the Coastal Plain Division of Illinois. The pre-settlement forests of this section were primarily bottomland oak-hickory forests (*Quercus bicolor*, *Q. lyrata*, *Q. michauxii*, *Q. pagoda*, *Q. palustris*, *Q. shumardii*, *Carya laciniosa*, *C. ovata*, *C. cordiformis* as well as *Fraxinus* spp., *Liquidambar styraciflua*, *Nyssa sylvatica*, and many others) (Schwegman *et al.* 1973). The wetland conceptual plan for this area suggests that emergent ponds, wet meadow, and a wetland tree planting would be the most likely development for this site (IDOT Wetland Conceptual Plan).

Illinois Natural History Survey (INHS) personnel began field monitoring of this area in 2004 and will continue for five years, as requested by the Illinois Department of Transportation (IDOT) (Marlow 2003). The Illinois State Geological Survey (ISGS) was also tasked to monitor the hydrology of this site. Project goals, objectives, and performance criteria are included in this report, as are monitoring methods, monitoring results, summary information and recommendations.

Project Goals, Objectives, and Performance Criteria

Proposed goals and objectives for this wetland mitigation project are based on information contained in the original wetland conceptual plan for this site (IDOT Wetland Conceptual Plan). Performance criteria are based on those specified in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), *Guidelines for Developing Mitigation Proposals* (USACOE 1993), and *Assessment of Created Wetland Performance in Illinois* (Plocher and Matthews 2004). Each goal should be attained by the end of the five-year monitoring period. Project goals, objectives and performance criteria are listed below.

Project Goal #1: At the end of the five-year monitoring period the created wetland communities should be jurisdictional wetlands as defined by current federal standards.

Objective: The created wetlands should comprise 1.750 hectares (4.325 acres) of jurisdictional wetland.

Performance Criteria: The created wetlands should satisfy the three criteria of the federal wetland definition: dominant hydrophytic vegetation, hydric soils, and wetland hydrology.

- A. Predominance of Hydrophytic Vegetation – More than 50% of the dominant plant species must be hydrophytic.
- B. Presence of Hydric Soils – Hydric soil characteristics should be present, or conditions favorable for hydric soil formation should persist at this site.
- C. Presence of Wetland Hydrology – The compensation area must be either permanently or periodically inundated at average depths less than 2 m (6.6 ft) or have soils that are saturated to the surface for at least 12.5% of the growing season.*

Project Goal #2: A native, non-weedy, emergent wetland community will be created (Sites 1, 2, and 3).

Objective: Planting the area with high quality native emergent vegetation should reduce the pressures from early successional, non-native, weedy species.

Table 1. Proposed emergent species to be planted at FAS 1907 (IL 127) wetland monitoring site.

Quantity	Scientific Name	Common Name	Size
500	<i>Acorus calamus</i>	Sweet Flag	2" x 3" pots
500	<i>Iris shrevei</i>	Blue Flag Iris	2" x 3" pots
500	<i>Pontederia cordata</i>	Pickerelweed	2" x 3" pots
500	<i>Scirpus acutus</i>	Hardstem Bulrush	2" x 3" pots
500	<i>Sagittaria latifolia</i>	Arrowhead	2" x 3" pots

In addition to these species it appears that an unknown quantity of *Juncus effusus* was also planted at the mitigation area.

Performance Criteria:

- A. At least 50% of the planted emergent species should be represented by live, healthy individuals at the end of five years of monitoring.
- B. At least 50% of the plant species present should be native and non-weedy species.
- C. Furthermore, none of the dominant plant species may be non-native.

* In some cases wetland hydrology can be met when a site is inundated or saturated for 5% to 12.5% of the growing season (Environmental Laboratory 1987).

Project Goal #3: A floodplain forest wetland community will be created (Site 4).

Objective: Planting the area with hydrophytic tree species should compensate for the loss of previously altered wetlands.

Performance Criterion: Seventy-five percent of the planted trees should be in a live and healthy condition each year for five years.

Methods

Monitoring of this wetland mitigation site began in 2004 and will continue for the standard five-year monitoring period. INHS personnel will monitor the biological parameters and ISGS personnel will monitor hydrology. The project area has been divided into four sites based on the original wetland conceptual plan (IDOT). Site 1, located at the north end of the mitigation area, was proposed as an emergent pond community. The site is u-shaped with a small hill in the center (Figure 2). Thus far an emergent pond/wet meadow characterizes this site. Herbaceous vegetation in Site 1 will be monitored annually using standard sampling techniques (Cox 1985). Transects placed 20 m apart have been established and herbaceous vegetation will be assessed using 1m² quadrats placed at two meter intervals along each transect, beginning with a quadrat one meter from the baseline. A minimum of forty 1m² quadrats will be sampled annually at Site 1. Likewise, Site 3 (emergent pond), located at the southeast corner of the mitigation area, will be assessed using standard sampling techniques (Cox 1985). Three transects (273°) have been established perpendicular to a baseline (3°) running along the east side of the wetland. Quadrats (1m²) will be placed at five meter intervals along each transect, beginning with a quadrat two meters from the baseline. A minimum of twenty 1m² quadrats will be sampled annually. Site 2 is a very small, narrow, wet meadow/marsh site. Because of its small size, Site 2 is not quantitatively sampled. Instead the assessment of dominant herbaceous vegetation in Site 2 will be done by a visual estimate. Dominant species for Site 4 (proposed wetland tree planting) will also be based on a visual estimate.

Results and status of the created wetland site will be submitted to the IDOT in yearly monitoring reports. The likelihood of meeting the proposed goals and performance criteria will also be addressed. If, at any time during the monitoring period, it appears that the goals/performance criteria will not be met at the end of the five-year monitoring period, written management recommendations will be made to IDOT in an effort to correct any problems.

Floristic Quality Index

A complete list of all plant species found in the project area will be recorded annually and the Floristic Quality Index (FQI) will be calculated (Swink and Wilhelm 1979 and 1994; Taft *et al.* 1997). The FQI provides a measure of the floristic integrity or level of disturbance of a site. Each native plant species is assigned a rating between 0 and 10 (the Coefficient of Conservatism) that is a subjective indicator of how likely a plant may be found on an undisturbed site in a natural plant community. A plant species that has a low Coefficient of Conservatism (C) is common and is likely to tolerate disturbed conditions; a species with a high C is relatively rare

and is likely to require specific, undisturbed habitats. Species not identified to species level are not rated and are not included in the calculations.

To calculate the FQI, first compute the mean C value (also known as mean rated quality), $mCv = \sum C/N$, where $\sum C$ represents the sum of the numerical ratings (C) for all species recorded for a site, and N represents the number of plants on the site. The C value for each species is shown in the species list for the site. Species that are not native to Illinois (indicated by * in the species list for each site) are not included in the calculations. The FQI for each site is determined by dividing the $\sum C$ value by the square root of N [$\sum C/(\sqrt{N})$]. An Index score below 10 suggests a site of low natural quality; below 5, a highly disturbed site. An FQI value of 20 or more ($mCv > 3$) suggests that a site has evidence of native character and may be considered an environmental asset.

Project Goal #1 At the end of the five-year monitoring period the created wetland community should be a jurisdictional wetland as defined by current federal standards.

Wetland delineations will be completed yearly for all wetlands created at this compensation site. Since accurate boundaries may not be clear until several years of data have been gathered, final delineation of wetland extent will be marked on an aerial photograph only after the plant communities have stabilized or at the end of the five year monitoring period.

Therefore it is important to recognize that wetland areas marked on the enclosed aerial photograph (Appendix 1, Figure 2) are subject to change. In addition, permanent photo stations have been established in each wetland area and photos will be taken annually in order to help monitor changes in the vegetation. Photos are included in Appendix 3 of the report.

A. Predominance of Hydrophytic Vegetation – The method for determining dominant hydrophytic vegetation is described in Environmental Laboratory (1987) and Federal Interagency Committee for Wetland Delineation (1989). This method is based on aerial coverage estimates for individual plant species. Each of the dominant plant species is assigned a wetland indicator status rating (Reed 1988). Any plant rated facultative or wetter (i.e., FAC, FAC+, FACW-, FACW, FACW+ and OBL) is considered hydrophytic. A predominance of hydrophytic vegetation in the wetland plant community exists if greater than 50% of the dominant species present are hydrophytic.

Dominant hydrophytic vegetation will be determined each year based on the results of systematic plant sampling (Sites 1 and 3) or by general visual estimates (Sites 2 and 4). For systematic plant sampling, cover of all species in each plot is assigned a cover class according to Daubenmire (1959) as modified by Bailey and Poulton (1968) (Table 2). Frequency (proportion of quadrats in which a species occurred) and average cover (calculated using midpoints for each cover class) will be used to compute relative frequency (frequency of a species relative to total observations) and relative cover (cover relative to total observed cover), respectively. These two relative values are averaged to determine the importance value for each species sampled. Importance values will be used to determine dominant species. "Dominant species are the most abundant plant species (when ranked in descending order of abundance and cumulatively totaled) that immediately exceed 50% of the total dominance measure for the stratum, plus any additional

species comprising 20% or more of the total dominance measure for the stratum" (FICWD 1989; Tiner 1999).

Table 2. Cover classes used in vegetation sampling.

Cover Class	Range of Cover (%)	Midpoint of Range (%)
1	0-1	0.5
2	1-5	3.0
3	5-25	15.0
4	25-50	37.5
5	50-75	62.5
6	75-95	85.0
7	95-100	97.5
(Daubenmire 1959; Bailey and Poulton 1968)		

B. Presence of Hydric Soils – INHS personnel will examine soil cores for field indicators to determine the presence or absence of hydric soils as described in the *Corps of Engineers Wetland Delineation Manual* (Environmental, 1987) and the *Field Indicators of Hydric Soils in the United States* (USDA 2002).

Hydric soils may develop slowly and characteristics may not be apparent during the first several years after project construction. In the absence of hydric soil indicators at that time, hydrologic data could be used as corroborative evidence that conditions favorable for hydric soil formation are present at the site.

C. Presence of Wetland Hydrology – The ISGS has been tasked to monitor hydrology at the proposed mitigation site. To date they have installed one surface-water monitoring station (RDS1), a rain gauge, four surface water staff gauges (A, B, C, and D), and nine monitoring wells (1S-9S) (Pociask and Shofner 2004). ISGS personnel will measure water levels monthly. In addition, INHS scientists will survey the site annually for field indicators of wetland hydrology.

Project Goal #2: A native, non-weedy, emergent wetland community will be created (Sites 1, 2, and 3).

Planted emergent species survivorship will be assessed each year for a five-year monitoring period (2004 to 2008). Initially six emergent species were planted. These emergent species were *Acorus calamus*, *Iris shrevei*, *Juncus effusus*, *Pontederia cordata*, *Sagittaria latifolia*, and *Scirpus acutus*. Annually, planted emergent species will be located, identified to species, and determined to be alive or dead. If less than 50% of the planted emergent species are represented by live, healthy individuals at the end of the five-year monitoring period, this part of the performance criteria for project goal #2 will be considered unsatisfied.

A complete species list will be compiled each year and species will be recorded as native or non-native and weedy or non-weedy. Nativity of plants will be determined by consulting

Mohlenbrock (1986; 2002) and Taft *et al.* (1997). Weedy species, for the purposes of this report, are defined as all non-native species and any native species assigned a Coefficient of Conservatism of 0 or 1 (Taft *et al.* 1997). Species given a C value of 0-1 correspond to Grime's ruderal species (Grime 1974; Grime *et al.* 1988) or species which are adapted to frequent or severe disturbances (Taft *et al.* 1997). If native and non-weedy species constitute less than 50% of the plant species present at a particular site, part B of the performance criteria for project goal #2 will be considered unsatisfied for that site. Furthermore, if any dominant species are non-native, part C of the performance criteria for project goal #2 will be considered unsatisfied.

Project Goal #3: A floodplain forest wetland community will be created (Site 4).

Tree survivorship will be assessed each year for a five-year monitoring period (2004 to 2008). Initially Site 4 was planted with a total of 187 trees. These trees included *Taxodium distichum* (21), *Fraxinus pennsylvanica* (17), *Liquidambar styraciflua* (17), *Platanus occidentalis* (17), *Quercus bicolor* (38), *Q. macrocarpa* (38), and *Q. palustris* (39). An additional fourteen *T. distichum* (total of 35) were planted at the north end of the mitigation area (around Site 1). Annually, every tree will be located, identified to species, and determined to be alive or dead.

Results

Floristic Quality Index: The FQI was calculated for each wetland delineation site using native species only. Site 1 (Emergent Pond/Wet Meadow) had a mean C value of 2.7 and a FQI score of 25.8. These values are indicative of good natural quality. Site 3 (mean C = 2.8, FQI = 20.0) also had values characteristic of good natural quality while Site 2 (mean C = 2.3, FQI = 14.3) and Site 4 (mean C = 2.0, FQI = 11.3) had scores characteristic of fair natural quality. However, when planted tree species were not included the mean C (1.4) and FQI (7.3) scores for Site 4 (proposed floodplain forest) exhibited poor natural quality. In 2004, numerous species indicative of higher natural quality were present. Species present with a C value of 6 or greater included: *Carex lurida* (Site 2), *Juncus diffusissimus* (Sites 1 and 2), *Mimulus alatus* (Site 1), *Panicum rigidulum* (Site 1), *Pluchea camphorata* (Site 3), and *Pontederia cordata* (Sites 1 and 3). Summary information for wetland delineation sites at the FAS 1907 (IL 127) wetland mitigation area is given in Table 3.

Table 3. Summary table for wetland sites at FAS 1907 (IL 127) Tamms wetland mitigation area, 2004.

	Site 1	Site 2	Site 3	Site 4
Total Species Richness	101	43	57	49
Native Species Richness	91	39	51	32
% Native	90%	91%	89%	65%
% Native and Non-weedy	62%	54%	63%	33%
Mean Conservatism	2.7	2.3	2.8	2.0
Floristic Quality Index (FQI)	25.8	14.3	20.0	11.3
% Wetland Species (FAC to OBL)	87%	88%	91%	57%

Project Goal #1 At the end of the five year monitoring period the created wetland community should be a jurisdictional wetland as defined by current federal standards.

A. Predominance of Hydrophytic Vegetation – The performance criterion requires that greater than 50% of the dominant plant species be hydrophytic. Dominant plant species for 2004 are given in Tables 4 through 7. Quantitative sampling results for Sites 1 and 3 are presented in Tables 8 and 9. More than 50% of the dominant species are hydrophytic for Sites 1, 2, and 3. Only Site 4 failed to satisfy this part of the performance criteria for project goal #1.

Table 4. Dominant species present at FAS 1907 (IL 127) Site 1 (Emergent Pond/Wet Meadow)

Species	Indicator Status	Stratum
1. <i>Echinochloa muricata</i>	OBL	herb
2. <i>Eleocharis obtusa</i>	OBL	herb
3. <i>Juncus interior</i>	FAC+	herb
4. <i>Lindernia dubia</i>	OBL	herb
5. <i>Panicum implicatum</i>	FAC	herb
6. <i>Panicum dichotomiflorum</i>	FACW	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%

Table 5. Dominant species present at FAS 1907 (IL 127) Site 2 (Marsh/Wet Meadow)

Dominant Plant Species	Indicator Status	Stratum
1. <i>Echinochloa muricata</i>	OBL	herb
2. <i>Eleocharis obtusa</i>	OBL	herb
3. <i>Typha latifolia</i>	OBL	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%

Table 6. Dominant species present at FAS 1907 (IL 127) Site 3 (Emergent Pond w/fringe)

Dominant Plant Species	Indicator Status	Stratum
1. <i>Juncus acuminatus</i>	OBL	herb
2. <i>Ludwigia peploides glabrescens</i>	OBL	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%

Table 7. Dominant species present at FAS 1907 (IL 127) Site 4 [Shrubland (proposed floodplain forest)]

Dominant Plant Species	Indicator Status	Stratum
1. <i>Quercus bicolor</i>	planted	sapling/shrub
2. <i>Quercus macrocarpa</i>	planted	sapling/shrub
3. <i>Quercus palustris</i>	planted	sapling/shrub
4. <i>Agrostis alba</i>	FACW	herb
5. <i>Elymus canadensis</i>	FAC-	herb
6. <i>Setaria faberi</i>	FACU+	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 33%

Table 8. FAS 1907 (IL 127) Site 1 wetland monitoring site vegetation sampling data including frequency, cover, and importance value for all species sampled in 2004. Dominants are in bold.

Species	Indicator	Freq.	Rel. Freq.	Avg. Cover	Rel. Cover	IV
<i>Panicum dichotomiflorum</i>	FACW-	0.3529	5.6604	7.1863	20.3781	13.0193
<i>Echinochloa muricata</i>	OBL	0.3725	5.9748	5.9706	16.9308	11.4528
<i>Eleocharis obtusa</i>	OBL	0.4510	7.2327	4.2451	12.0378	9.6353
<i>Panicum implicatum</i>	FAC	0.2353	3.7736	4.2745	12.1212	7.9474
<i>Lindernia dubia</i>	OBL	0.3037	5.0314	2.7941	7.9233	6.4774
<i>Juncus interior</i>	FAC+	0.3725	5.9748	1.2843	3.6419	4.8084
<i>Mollugo verticillata</i>	FAC	0.4118	6.6038	0.5000	1.4178	4.0108
<i>Ammannia coccinea</i>	OBL	0.3333	5.3459	0.4608	1.3066	3.3263
<i>Rorippa sessiliflora/palustris</i>	OBL	0.3333	5.3459	0.3627	1.0286	3.1873
<i>Carex tribuloides</i>	FACW+	0.2353	3.7736	0.7941	2.2519	3.0128
<i>Polygonum hydropiperoides</i>	OBL	0.2745	4.4025	0.5294	1.5013	2.9519
<i>Eclipta prostrata</i>	FACW	0.2157	3.4591	0.4412	1.2510	2.3551
<i>Carex vulpinoidea</i>	OBL	0.0784	1.2579	0.9118	2.5855	1.9217
<i>Aster simplex</i>	FACW	0.1176	1.8868	0.6765	1.9183	1.9026
<i>Setaria faberi</i>	FACU+	0.1765	2.8302	0.1863	0.5282	1.6792
<i>Ambrosia artemisiifolia</i>	FACU	0.1569	2.5157	0.1765	0.5004	1.5081
<i>Ludwigia palustris americana</i>	OBL	0.0392	0.6289	0.7941	2.2519	1.4404
<i>Rumex crispus</i>	FAC+	0.1569	2.5157	0.0784	0.2224	1.3691
<i>Aster ontariensis</i>	FAC	0.1373	2.2013	0.1667	0.4726	1.3370
<i>Polygonum pennsylvanicum/bicorne</i>	FACW+/FAC	0.1176	1.8868	0.2549	0.7228	1.3048
<i>Acorus calamus</i>	OBL	0.0196	0.3145	0.7353	2.0851	1.1998
<i>Rotala ramosior</i>	OBL	0.1176	1.8868	0.1569	0.4448	1.1658
<i>Scirpus atrovirens</i>	OBL	0.0588	0.9434	0.4118	1.1676	1.0555
<i>Sida spinosa</i>	FACU	0.0980	1.5723	0.0490	0.1390	0.8557
<i>Iris shrevei</i>	OBL	0.0392	0.6289	0.3529	1.0008	0.8149
<i>Lespedeza cuneata</i>	NI	0.0784	1.2579	0.0882	0.2502	0.7541
<i>Paspalum laeve</i>	UPL	0.0196	0.3145	0.2941	0.8340	0.5743
<i>Typha latifolia</i>	OBL	0.0196	0.3145	0.2941	0.8340	0.5743
<i>Leersia oryzoides</i>	OBL	0.0588	0.9434	0.0294	0.0834	0.5134
<i>Ranunculus sceleratus</i>	OBL	0.0588	0.9434	0.0294	0.0834	0.5134
<i>Polygonum persicaria</i>	FACW	0.0392	0.6289	0.1176	0.3336	0.4813
<i>Polygonum lapathifolium</i>	FACW+	0.0392	0.6289	0.0686	0.1946	0.4118
<i>Amaranthus tuberculatus</i>	OBL	0.0392	0.6289	0.0196	0.0556	0.3423
<i>Cyperus iria</i>	FACW	0.0392	0.6289	0.0196	0.0556	0.3423
<i>Hypericum mutilum</i>	FACW	0.0392	0.6289	0.0196	0.0556	0.3423
<i>Ludwigia polycarpa</i>	OBL	0.0392	0.6289	0.0196	0.0556	0.3423
<i>Solanum carolinense</i>	FACU-	0.0392	0.6289	0.0196	0.0556	0.3423
unknown seedling (<i>Verbascum</i>)	----	0.0392	0.6289	0.0196	0.0556	0.3423
<i>Xanthium strumarium</i>	FAC	0.0392	0.6289	0.0196	0.0556	0.3423
<i>Agrostis alba</i>	FACW	0.0196	0.3145	0.0588	0.1668	0.2407
<i>Campsis radicans</i>	FAC	0.0196	0.3145	0.0588	0.1668	0.2407
<i>Carex sp.</i>	----	0.0196	0.3145	0.0588	0.1668	0.2407
<i>Penthorum sedoides</i>	OBL	0.0196	0.3145	0.0588	0.1668	0.2407
<i>Acalypha rhomboidea</i>	FACU	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Bidens frondosa</i>	FACW	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Boltonia asteroides</i>	FACW	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Carex sp.</i>	----	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Conyza canadensis</i>	FAC-	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Digitaria sanguinalis</i>	FACU	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Diospyros virginiana</i>	FAC	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Eupatorium serotinum</i>	FAC+	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Juncus effusus</i>	OBL	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Juncus sp.</i>	----	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Panicum clandestinum</i>	FACW	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Polygonum punctatum</i>	OBL	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Pontederia cordata</i>	OBL	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Pycnanthemum virginianum</i>	FACW+	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Rhus glabra</i>	UPL	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Salix nigra</i>	OBL	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Solidago canadensis</i>	FACU	0.0196	0.3145	0.0098	0.0278	0.1712
<i>Vitis riparia</i>	FACW-	0.0196	0.3145	0.0098	0.0278	0.1712
Average bare ground cover = 58.5%		6.2246	100.00	35.26441	100.00	100.00

Table 9. FAS 1907 (IL 127) Site 3 wetland monitoring site vegetation sampling data including frequency, cover, and importance value for all species sampled in 2004. Dominants are in bold.

Species	Indicator	Freq.	Rel. Freq.	Avg. Cover	Rel. Cover	IV
<i>Ludwigia peploides</i>	OBL	0.7308	18.8119	22.3654	46.0959	32.4539
<i>Juncus acuminatus</i>	OBL	0.4231	10.8911	11.9808	24.6928	17.7920
<i>Echinochloa muricata</i>	OBL	0.4615	11.8812	3.5192	7.2533	9.5673
<i>Eleocharis obtusa</i>	OBL	0.2308	5.9406	3.6154	7.4514	6.6960
<i>Acorus calamus</i>	OBL	0.1923	4.9505	1.8654	3.8446	4.3976
<i>Ammannia coccinea</i>	OBL	0.2308	5.9406	0.7692	1.5854	3.7630
<i>Juncus effusus</i>	OBL	0.0769	1.9802	2.0192	4.1617	3.0710
<i>Pontederia cordata</i>	OBL	0.1538	3.9604	0.2692	0.5549	2.2577
<i>Juncus interior</i>	FAC+	0.1538	3.9604	0.1731	0.3567	2.1586
<i>Xanthium strumarium</i>	FAC	0.1154	2.9703	0.0577	0.1189	1.5446
<i>Polygonum hydropiperioides</i>	OBL	0.1154	2.9703	0.0577	0.1189	1.5446
<i>Panicum dichotomiflorum</i>	FACW-	0.0769	1.9802	0.1346	0.2774	1.1288
<i>Polygonum pensylvanicum</i>	FACW+	0.0769	1.9802	0.1346	0.2774	1.1288
<i>Eclipta prostrata</i>	FACW	0.0769	1.9802	0.1346	0.2774	1.1288
<i>Leersia oryzoides</i>	OBL	0.0769	1.9802	0.1346	0.2774	1.1288
<i>Rotala ramosior</i>	OBL	0.0769	1.9802	0.1346	0.2774	1.1288
<i>Juncus torreyi</i>	FACW	0.0385	0.9901	0.5769	1.1891	1.0896
<i>Ranunculus sceleratus</i>	OBL	0.0769	1.9802	0.0385	0.0793	1.0298
<i>Rorippa sessiliflora/palustris</i>	OBL	0.0769	1.9802	0.0385	0.0793	1.0298
<i>Polygonum lapathifolium</i>	FACW+	0.0769	1.9802	0.0385	0.0793	1.0298
<i>Iris shrevei</i>	OBL	0.0385	0.9901	0.1154	0.2378	0.6140
<i>Ludwigia polycarpa</i>	OBL	0.0385	0.9901	0.1154	0.2378	0.6140
<i>Agrostis alba</i>	FACW	0.0385	0.9901	0.1154	0.2378	0.6140
<i>Mollugo verticillata</i>	FAC	0.0385	0.9901	0.0192	0.0396	0.5149
<i>Setaria faberi</i>	FACU+	0.0385	0.9901	0.0192	0.0396	0.5149
<i>Typha latifolia</i>	OBL	0.0385	0.9901	0.0192	0.0396	0.5149
<i>Typha angustifolia</i>	OBL	0.0385	0.9901	0.0192	0.0396	0.5149
<i>Sida spinosa</i>	FACU	0.0385	0.9901	0.0192	0.0396	0.5149
<i>Ludwigia alternifolia</i>	OBL	0.0385	0.9901	0.0192	0.0396	0.5149
		3.8848	100.0001	48.5191	99.9995	99.9998
bare ground				40.1132		

B. Presence of Hydric Soils – The performance criterion requires that hydric soil characteristics be present, or conditions favorable for hydric soil formation should persist. INHS personnel examined soil cores for field indicators to determine the presence or absence of hydric soils as described in the *Corps of Engineers Wetland Delineation Manual* (Environmental, 1987) and the *Field Indicators of Hydric Soils in the United States* (USDA 2003). The NRCS (Natural Resource Conservation Service) had mapped the entire site as hydric soils. After conducting a field investigation, the first three sites that received some excavation appeared to be hydric. The fourth site, which is not considered part of the wetland acreage but as

a buffer, varied from being hydric to non-hydric. Following is a soil description of a typical pedon for each site.

Table 10. Site 1 (Emergent Pond/Wet Meadow) – Karnak silty clay.

<u>Hor- izon</u>	<u>Depth (in)</u>	<u>Matrix Color</u>	<u>Concre- -tions</u>	<u>Iron Masses</u>	<u>Pore linings</u>	<u>Iron Deplet.</u>	<u>Clay Depletions</u>	<u>Text- ure</u>	<u>Structure</u>
	0-2	10YR 4/2						sil	gr
	2-15	2.5Y 6/2		FMP 7.5YR 5/4 CMP 7.5YR 5/8				sicl	bl
	15-22	2.5Y 6/2		FMD 10YR 5/4 CCP 7.5YR 5/8				sic	pr
	22-36	2.5Y 6/2		MCD 10YR 5/4 FMP 7.5YR 5/8				sic	pr

Table 11. Site 2 (Marsh/Wet Meadow) – Cape silty clay.

<u>Hor- izon</u>	<u>Depth (in)</u>	<u>Matrix Color</u>	<u>Concre- -tions</u>	<u>Iron Masses</u>	<u>Pore linings</u>	<u>Iron Deplet.</u>	<u>Clay Depletions</u>	<u>Text- ure</u>	<u>Structure</u>
	0-2	2.5Y 5/2		FMP 10YR 5/6 and 5/8				sicl	bl
	2-9	2.5Y 5/2		FMP 10YR 5/6 FMP 7.5YR 5/8				sic	pr
	9-20	2.5Y 5/3		FFP 10YR 5/6				sic	pr
	20-	2.5Y 6/2		MMP 10YR 5/6 FFP 7.5YR 5/8				sic	pr

Table 12. Site 3 (Emergent Pond w/fringe) – Okaw silty clay loam.

<u>Hor- izon</u>	<u>Depth (in)</u>	<u>Matrix Color</u>	<u>Concre- -tions</u>	<u>Iron Masses</u>	<u>Pore linings</u>	<u>Iron Deplet.</u>	<u>Clay Depletions</u>	<u>Text- ure</u>	<u>Structure</u>
	0-3	10YR 6/1 10YR 5/2		CMP 7.5YR 5/8 CMP 7.5YR 5/6	CM 7.5YR 5/8			sicl	gr
	3-6	2.5Y 5/1		CMP 7.5YR 5/6 FFP 7.5YR 5/8	CM 7.5YR 5/8			sicl	bl
	6-28	2.5Y 6/2		FCD 7.5YR 4/6	FM 7.5YR 5/3			sic	pr
	28-38	2.5Y 6/2		MMP 10YR 5/4	FM 7.5YR 5/3			Sic	pr

Table 13. Site 4 (Shrubland; proposed floodplain forest) – Variable (non-hydric with hydric inclusions).

<u>Hor- izon</u>	<u>Depth (in)</u>	<u>Matrix Color</u>	<u>Concre- -tions</u>	<u>Iron Masses</u>	<u>Pore linings</u>	<u>Iron Deplet.</u>	<u>Clay Deplet.</u>	<u>Tex- ture</u>	<u>Structure</u>
	0-4	10YR 4/2	CM 10YR 2/1	FFD 10YR 5/4				sil	gr
	4-9	10YR 4/3	FM 10YR 2/1	CMP 10YR 5/8				sic	pl
	9-21	2.5Y 5/3 2.5Y 6/2	FM 10YR 2/1	FMP 7.5YR 5/8 FFD 10YR 5/4				sic	pr
	21-36	2.5Y 5/3 2.5Y 6/2	CM 10YR 2/1	MCP 7.5YR 4/6 FMP 7.5YR 5/8				sic	pr

C. Presence of Wetland Hydrology – The performance criterion requires that the compensation area must be either permanently or periodically inundated at average depths less than 2 m (6.6 ft) or have soils that are saturated to the surface for at least 12.5% of the growing season*. The ISGS initiated water level monitoring at this site in November 2003. Their findings for 2004 indicate that 1.0 ha (2.5 ac) out of a total site area of approximately 6.3 ha (15.6 ac) satisfied the wetland hydrology criterion for greater than 5% of the growing season. Included within this area are 0.6 ha (1.6 ac) that conclusively satisfied the wetland hydrology criterion for 12.5% of the growing season (Pociask and Shofner 2004; Appendix 1, Figure 1).

During visits to the mitigation area, the following indicators of wetland hydrology were present: areas of inundation, algal mats, mud cracks, blackened-leaves, and areas of surface or near surface saturation.

Project Goal #2: A native, non-weedy, emergent wetland community will be created (Sites 1, 2, and 3).

Initially five emergent species (*Acorus calamus*, *Iris shrevei*, *Pontederia cordata*, *Sagittaria latifolia*, and *Scirpus acutus*) were to be planted at the FAS 1907 (IL 127) mitigation site (IDOT Wetland Construction Plan). Subsequently *Juncus effusus* was also planted at the mitigation area. Numerous live, healthy individuals of all species except for *Scirpus acutus* were observed (83% of planted emergent were observed in a live, health condition). This part of the performance criteria is satisfied in 2004.

Three emergent wetland sites (Sites 1, 2, and 3) have been created at the FAS 1907 (IL 127) mitigation area. All three sites had a high percentage of native species (Site 1 = 90%, Site 2 = 91%, Site 3 = 89%; Table 3). Furthermore, percentages of native and non-weedy species were at acceptable levels (Site 1 = 62%; Site 2 = 54%; Site 3 = 63%). All three sites satisfy the second part of the performance criteria for project goal #2.

* In some cases wetland hydrology can be met when a site is inundated or saturated for 5% to 12.5% of the growing season (Environmental Laboratory 1987).

All dominant species at the three emergent wetland sites were native species (Tables 4-6, 8-9). Part C of the performance criteria for project goal #2 is satisfied in 2004.

Project Goal #3: A floodplain forest wetland community will be created (Site 4).

All planted trees within FAS 1907 (IL 127) wetland mitigation area were located, identified and their condition was assessed. A total of 183 trees were found alive in 2004. In all, 18 of 201 trees planted at this site have died (91% overall survival). Only *Liquidambar styraciflua* survival (71%) was below the 75% threshold. All other species were at acceptable levels. Table 14 shows the cumulative survivorship for each tree species planted at the FAS 1907 (IL 127) wetland mitigation site.

Table 14. Cumulative tree survival for FAS 1907 (IL 127) wetland monitoring site - 2004.

Species	# Alive	# Dead	Total Planted	% Survival
<i>Fraxinus pennsylvanica</i>	17	0	17	100%
<i>Liquidambar styraciflua</i>	12	5	17	71%
<i>Platanus occidentalis</i>	16	1	17	94%
<i>Quercus bicolor</i>	34	4	38	89%
<i>Quercus macrocarpa</i>	32	6	38	84%
<i>Quercus palustris</i>	39	0	39	100%
<i>Taxodium distichum</i>	33	2	35	94%
Totals	183	18	201	91%

Summary and Recommendations

Table 15. Summary table of FAS 1907 (IL 127) Project Goal success.

Project Goal #1- Create jurisdictional wetlands (Sites 1-4)	
Performance Criterion A (hydrophytic vegetation)	Satisfied (Sites 1-3), Unsatisfied (Site 4)
Performance Criterion B (hydric soils)	Satisfied (Sites 1-3), Unsatisfied (Site 4)
Performance Criterion C (wetland hydrology)	Satisfied (Sites 1-3), Unsatisfied (Site 4)
Project Goal #2 - Create native, non-weedy emergent wetlands (Sites 1-3)	
Performance Criterion A (50% planted emergent survival)	Satisfied (Sites 1-3)
Performance Criterion B (50% native, non-weedy species)	Satisfied (Sites 1-3)
Performance Criterion C (No non-native dominants)	Satisfied (Sites 1-3)
Project Goal #3 - Create a floodplain forest community (Site 4)	
Performance Criterion (< 75% tree survival)	Satisfied (Site 4)

With the exception of project goal #1 for Site 4 all project goals were satisfied in 2004. Site 4, although not a wetland, is still valuable as a buffer for the created emergent wetlands (Sites 2 and 3) at the south end of the mitigation area.

At this early stage of monitoring, planted herbaceous and tree species are above projected survivorship levels. Only *Liquidambar styraciflua* (sweet gum) was below the 75% threshold for trees. It is our recommendation that replanting be done, at least for this species. Additional replanting of other tree species might be considered as well. Floristic quality of all emergent

sites is very promising. Sites 1 (mean C = 2.7, FQI = 25.8) and 3 (mean C = 2.8, FQI = 20.0) are especially diverse for the first year of monitoring.

Total area of the created wetlands is of some concern. In 2004 we determined the area of created wetlands at FAS 1907 (IL 127) to be 1.00 ha (2.48 ac) (Appendix 1, Figure 2). The objective for project goal #1 was to create 1.750 ha (4.325 ac) of jurisdictional wetland. It is conceivable that some additional wetland area might develop at this site. Pociask and Shofner (2004) state that total precipitation for September 2003 to August 2004 was 68% of normal. It is unlikely, however, that an additional 0.75 ha (1.845 ac) of wetland will develop. Additional mitigation area should be searched for if this requirement is to be met.

Dominant species and overall species composition of the three created emergent wetlands are on course for good development. All dominants are native at this time and all three emergent wetlands are represented by greater than 50% native and non-weedy species. A few aggressive non-native species are present within the mitigation area. *Typha angustifolia* (narrow-leaf cattail) is present in low numbers at Site 3 and *Phalaris arundinacea* (reed canary grass) is present at Site 4. The abundance of these aggressive, persistent weeds will continue to be monitored and management recommendations will be made as it becomes necessary. At this time, as a precautionary measure, we recommend spraying with herbicide to remove them from the site. Hopefully this treatment will remove them from the project area before they become a serious problem.

Literature Cited

- Bailey, A.W. and C.E. Poulton. 1968. Plant communities and environmental relationships in a portion of the Tillamook burn, northwestern Oregon. *Ecology* 49:1-13.
- Cox, G. W. 1985. Laboratory manual of general ecology. William C. Brown Press, Dubuque, Iowa.
- Daubenmire, R. F. 1959. A canopy coverage method of vegetation analysis. *Northwest Science* 33:43-64.
- Environmental Laboratory. 1987. Corps of Engineers Wetland Delineation Manual. Technical Report Y-87-1, U. S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. 207 pp.
- Federal Interagency Committee for Wetland Delineations. 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. Cooperative technical publication. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and USDA Soil Conservation Service, Washington, D.C.
- Grime, J. P. 1974. Vegetation classification by reference to strategies. *Nature*. 250:26-31.
- Grime, J. P., J. G. Hodgson, and R. Hunt. 1988. Comparative plant ecology: a functional approach to common British species. Unwin & Hyman, London.

- Illinois Department of Transportation. No date. Wetland Compensation Plan Illinois Route 127 Union and Alexander Counties. Memorandum from the Illinois Department of Transportation, Springfield. 6 pp.
- Illinois Department of Transportation. No date. Wetland Construction Plan for FAS 1907 (IL Route 127) Section 23W-1, RS-1; 16, 17, 15, 21, 19W, RS Union and Alexander Counties. Memorandum from the Illinois Department of Transportation, Springfield. pp 9-14 + maps.
- Marlow, S. 2003. FAS 1907 (IL 127) wetland mitigation monitoring task order. Memorandum from the Illinois Department of Transportation. 1 p.
- Mohlenbrock, R.H. 1986. Guide to the vascular flora of Illinois. Southern Illinois University Press, Carbondale, Illinois. 507 pp.
- Mohlenbrock, R.H. 2002. Vascular flora of Illinois. Southern Illinois University Press, Carbondale, Illinois. 490 pp.
- Parks, W.D. and J.B. Fehrenbacher. 1968. Soil Survey of Pulaski and Alexander Counties, Illinois. United States Department of Agriculture, Soil Conservation Service, in cooperation with the Illinois Agricultural Experiment Station. Soil Report #85.
- Plocher, A.E. and J.W. Matthews. 2004. Assessment of Created Wetland Performance in Illinois. Illinois Natural History Survey, Special Publication 27. ii + 22 pp.
- Pociask, G.E. and G.A. Shofner. 2004. Tamms Wetland Compensation Site, FAS 1907, Union County near Tamms, Illinois. ISGS #71 in Annual Report for Active IDOT Wetland Compensation and Hydrologic Monitoring Sites. Technical report submitted to the Illinois Department of Transportation by the Illinois State Geological Survey, Champaign, Illinois. pp. 266-272.
- Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Illinois. U. S. Fish and Wildlife Service. National Wetlands Inventory. NERC-88/18.13. 117 pp.
- Schwegman, J.E., G.D. Fell, M. Hutchison, G. Paulson, W.M. Shepherd, and J. White. 1973. Comprehensive Plan for the Illinois Nature Preserves System. Part II – The Natural Divisions of Illinois. Illinois Nature Preserves Commission, Springfield. 32 pp. + map.
- Swink, F. S. and G. S. Wilhelm. 1979. Plants of the Chicago Region. Revised and expanded with keys. 3rd edition. Morton Arboretum, Lisle, Illinois.
- Swink, F. S. and G. S. Wilhelm. 1994. Plants of the Chicago region. 4th edition. Indiana Academy of Science Press, Indianapolis, Indiana.
- Taft, J. B., G. S. Wilhelm, D. M. Ladd, and L. A. Masters. 1997. Floristic quality assessment for vegetation in Illinois: a method for assessing vegetation integrity. *Erigenia* 15: 3-95.

Tiner, R. W. 1999. Wetland Indicators: A Guide to Wetland Identification, Delineation, Classification, and Mapping. Lewis Publishers. 392 pp.

United States Army Corps of Engineers. 1993. Guidelines for developing mitigation proposals. Chicago District. September 1, 1993.

USDA, Natural Resources Conservation Service. 2002. The PLANTS Database, Version 3.5
<http://plants.usda.gov>. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA, Natural Resources Conservation Service. 2002. Field Indicators of Hydric Soils in the United States. 34 pages

Appendix 1. Figures

Tamms Wetland Compensation Site (FAS 1907)

Estimated Areal Extent of 2004 Wetland Hydrology

map based on IDOT design plans and ISGS topography rectified to USGS digital orthophotograph
Mill Creek quarter quadrangle (ISGS 2004).

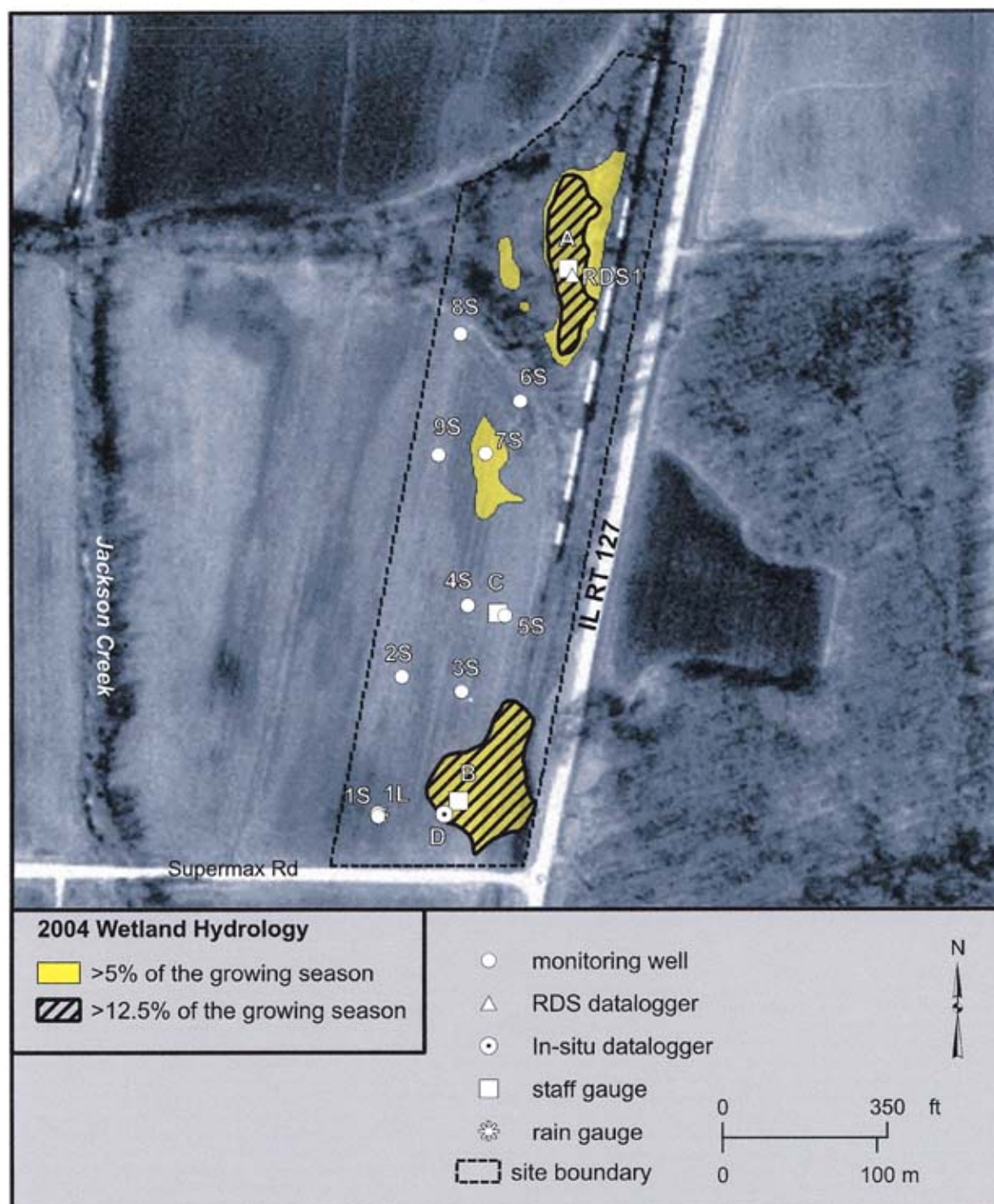
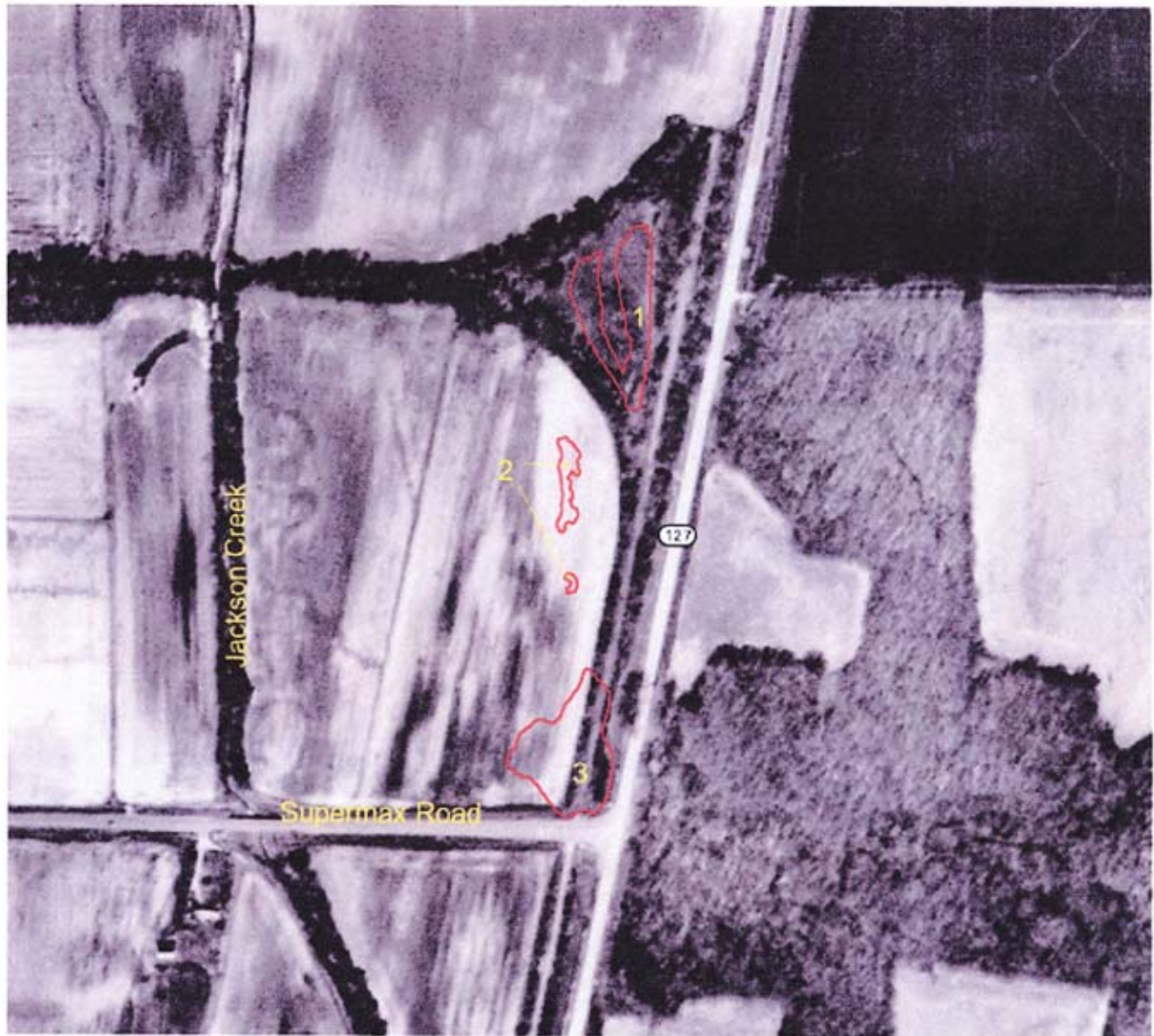


Figure 1. 2004 aerial extent of wetland hydrology for FAS 1907 (IL 127) wetland monitoring site (prepared by ISGS, Pociask and Shofner 2004).

Figure 2. Estimated aerial extent of the created wetland sites at FAS 1907 (IL 127), Alexander County, near Tamms, Illinois.

FAS 1907, Mitigation Monitoring Site Alexander County



0 400 800 Feet

0 100 200 Meters

- Wetland site**
site 1 - 1.01 acres
site 2 - 0.20 acre
site 3 - 1.27 acres

scale 1:4800
1 inch=400 ft



Appendix 2. Wetland Determination Forms

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 1 of 6)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond/Wet Meadow

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This emergent pond/wet meadow is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

Do normal environmental conditions exist at this site? Yes: X No:

Has the vegetation, soils, or hydrology been significantly disturbed? Yes: X No:

** This site is a recently excavated depression, created for mitigation purposes.*

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. <i>Echinochloa muricata</i>	OBL	herb
2. <i>Eleocharis obtusa</i>	OBL	herb
3. <i>Juncus interior</i>	FAC+	herb
4. <i>Lindernia dubia</i>	OBL	herb
5. <i>Panicum implicatum</i>	FAC	herb
6. <i>Panicum dichotomiflorum</i>	FACW	herb

based on quantitative vegetation sampling; Table 8

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%

Hydrophytic vegetation: Yes: X No:

Rationale: Greater than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Karnak silty clay

On Alexander County hydric soils list? Yes: X No:

Is the soil a histosol? Yes: No: X Histic epipedon present? Yes: No: X

Redox concentrations: Yes: X No: Redox depletions: Yes: X No:

Matrix color: 2.5Y 6/2

Other indicators: This soil is found in a depressional area.

Note: At least one foot of the topsoil has been excavated at this site in order to lower this area.

Hydric soils: Yes: X No:

Rationale: The Natural Resources Conservation Service classifies Karnak silty clay as having aquic conditions. This soil has iron masses and an iron depleted matrix. These characteristics are evidence of a hydric soil.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 2 of 6)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond/Wet Meadow

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This emergent pond/wet meadow is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

HYDROLOGY

Inundated: Yes: X (in part) No: **Depth of standing water:** up to 0.10 m (4 in) at the time of sampling (8-25-04)

Depth to saturated soil: 0 to 1.02 m (0 to 40 in)

Overview of hydrological flow through the system: This site is located in a depression surrounded by higher ground on all sides. Water enters this site via precipitation and sheet flow from surrounding higher ground. Additional transfer of water occurs through a low area between this site and a long narrow wetland along IL 27. Water leaves the site primarily via evapotranspiration and slowly through soil infiltration.

Size of watershed: Less than 2.59 km² (1 mi²).

Other field evidence observed: This site has been excavated to hold water for longer periods. Areas of inundation, bare areas indicating ponded water, algal mats, mud cracks, and blackened leaves were observed at this site.

Wetland hydrology: Yes: X No:

Rationale: A depressional landscape position and field evidence of saturation and inundation suggest that this site is saturated long enough during the growing season to meet the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the site a wetland?
Rationale for decision:

Yes: X No:
Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are present; therefore, this site is a wetland. The NWI does not code this site as a wetland.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 3 of 6)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond/Wet Meadow

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This emergent pond/wet meadow is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Acalypha rhomboidea</i>	three-seeded mercury	herb	FACU	0
<i>Acorus calamus</i>	sweetflag	herb	OBL	4
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Alopecurus carolinianus</i>	annual foxtail	herb	FACW	0
<i>Amaranthus tuberculatus</i>	tall waterhemp	herb	OBL	1
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Ammannia coccinea</i>	long-leaved ammannia	herb	OBL	5
<i>Apios americana</i>	groundnut	herb	FACW	4
<i>Aster ontarionis</i>	Ontario aster	herb	FAC	4
<i>Aster simplex</i>	panicked aster	herb	FACW	3
<i>Aster vimineus</i>	frost flower	herb	FACW-	3
<i>Barbarea vulgaris</i>	winter cress	herb	FAC	*
<i>Bidens frondosa</i>	common beggar's ticks	herb	FACW	1
<i>Boltonia asteroides</i>	false aster	herb	FACW	5
<i>Callitriche heterophylla</i>	large water starwort	herb	OBL	5
<i>Campsis radicans</i>	trumpet creeper	herb	FAC	2
<i>Carex hyalinolepis</i>	southern lake sedge	herb	OBL	4
<i>Carex tribuloides</i>	oval sedge	herb	FACW+	3
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	3
<i>Carex</i> sp.	sedge	herb	----	--
<i>Carex</i> sp.	sedge	herb	----	--
<i>Cerastium</i> sp.	chickweed	herb	----	--
<i>Cicuta maculata</i>	water hemlock	herb	OBL	4
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Cynanchum laeve</i>	blue vine	herb	FAC	1
<i>Cyperus acuminatus</i>	taperleaf flatsedge	herb	OBL	2
<i>Cyperus esculentus</i>	yellow nut-sedge	herb	FACW	0
<i>Cyperus iria</i>	ricefield flatsedge	herb	FACW	*
<i>Cyperus strigosus</i>	straw-colored flatsedge	herb	FACW	0

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 4 of 6)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond/Wet Meadow

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This emergent pond/wet meadow is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Digitaria sanguinalis</i>	hairy crab grass	herb	FACU	*
<i>Diospyros virginiana</i>	persimmon	shrub, herb	FAC	2
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eclipta prostrata</i>	yerba de tajo	herb	FACW	2
<i>Eleocharis erythropoda</i>	red-rooted spikerush	herb	OBL	3
<i>Eleocharis obtusa</i>	blunt spike rush	herb	OBL	2
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Erigeron philadelphicus</i>	marsh fleabane	herb	FACW	3
<i>Eupatorium perfoliatum</i>	common boneset	herb	FACW+	4
<i>Eupatorium serotinum</i>	late boneset	herb	FAC+	1
<i>Euthamia graminifolia</i>	grassleaf goldenrod	herb	FACW-	3
<i>Geranium carolinianum</i>	wild cranesbill	herb	UPL	2
<i>Glyceria striata</i>	fowl manna grass	herb	OBL	4
<i>Gratiola neglecta</i>	clammy hedge hyssop	herb	OBL	5
<i>Hibiscus lasiocarpus</i>	hairy rose mallow	herb	FACW+	5
<i>Hypericum mutilum</i>	dwarf St. John's wort	herb	FACW	5
<i>Ipomoea lacunosa</i>	small white morning-glory	herb	FACW	1
<i>Ipomoea pandurata</i>	wild sweet potato vine	herb	FACU	2
<i>Iris shrevei</i>	southern blue flag	herb	OBL	5
<i>Iva annua</i>	marsh elder	herb	FAC	0
<i>Juncus acuminatus</i>	knotty-leaved rush	herb	OBL	4
<i>Juncus diffusissimus</i>	slimpod rush	herb	FACW	7
<i>Juncus effusus solutus</i>	common rush	herb	OBL	4
<i>Juncus interior</i>	inland rush	herb	FAC+	3
<i>Juncus tenuis</i>	path rush	herb	FAC	0
<i>Juncus sp.</i>	rush	herb	----	--
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Lespedeza cuneata</i>	sericea lespedeza	herb	NI	*
<i>Lindernia dubia</i>	false pimpernel	herb	OBL	5
<i>Ludwigia alternifolia</i>	seedbox	herb	OBL	5

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 5 of 6)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond/Wet Meadow

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This emergent pond/wet meadow is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Ludwigia palustris americana</i>	marsh purslane	herb	OBL	4
<i>Ludwigia polycarpa</i>	false loosestrife	herb	OBL	5
<i>Mimulus alatus</i>	winged monkey flower	herb	OBL	6
<i>Mollugo verticillata</i>	carpetweed	herb	FAC	*
<i>Myosurus minimus</i>	mousetail	herb	FACW	0
<i>Panicum clandestinum</i>	deer-tongue grass	herb	FACW	4
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Panicum implicatum</i>	old field panic grass	herb	FAC	2
<i>Panicum rigidulum</i>	Munro grass	herb	FACW	6
<i>Paspalum laeve</i>	smooth lens grass	herb	UPL	2
<i>Paspalum pubiflorum glabrum</i>	beadgrass	herb	FACW	3
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
<i>Phyllanthus carolinensis</i>	phyllanthus	herb	FAC	5
<i>Polygonum bicornе</i>	smartweed	herb	FAC	2
<i>Polygonum hydropiperoides</i>	mild water pepper	herb	OBL	4
<i>Polygonum lapathifolium</i>	currtop lady's thumb	herb	FACW+	0
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum persicaria</i>	spotted lady's thumb	herb	FACW	*
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Pontederia cordata</i>	pickerelweed	herb	OBL	8
<i>Populus deltoides</i>	eastern cottonwood	herb	FAC+	2
<i>Pycnanthemum virginianum</i>	common mountain mint	herb	FACW+	5
<i>Ranunculus sceleratus</i>	cursed crowfoot	herb	OBL	3
<i>Rhus glabra</i>	smooth sumac	herb	UPL	1
<i>Rorippa islandica</i>	marsh yellow cress	herb	OBL	4
<i>Rorippa sessiliflora</i>	sessile-flowered cress	herb	OBL	3
<i>Rotala ramosior</i>	tooth-cup	herb	OBL	4
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Sagittaria latifolia</i>	arrowhead	herb	OBL	4
<i>Salix nigra</i>	black willow	shrub, herb	OBL	3

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 6 of 6)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond/Wet Meadow

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This emergent pond/wet meadow is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Scirpus cyperinus</i>	wool-grass	herb	OBL	5
<i>Senecio glabellus</i>	butterweed	herb	OBL	0
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Setaria glauca</i>	pigeon grass	herb	FAC	*
<i>Sida spinosa</i>	prickly sida	herb	FACU	*
<i>Solanum carolinense</i>	horse nettle	herb	FACU-	0
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Teucrium canadense</i>	American germander	herb	FACW-	3
<i>Toxicodendron radicans</i>	poison ivy	herb	FAC+	1
<i>Typha latifolia</i>	cattail	herb	OBL	1
<i>Ulmus americana</i>	American elm	herb	FACW-	5
<i>Veronica peregrina</i>	purslane speedwell	herb	FACW+	0
<i>Vitis riparia</i>	riverbank grape	vine	FACW-	2
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0
Unkown seedling (c.f. <i>Verbascum</i>)		herb	----	--

♦ Coefficient of Conservatism (Taft *et al.* 1997)

*Non-native species

$$\text{mean C value (mCv)} = \sum C/N = 246/91 = 2.7$$

$$\text{FQI} = \sum C/\sqrt{N} = 246/(\sqrt{91}) = 25.8$$

Determined by: Paul Marcum, Rick Larimore, Dave Ketzner (vegetation and hydrology)
Dennis Keene (soils and hydrology)
Brad Zercher (GPS, GIS and hydrology)
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(217) 333-8459 (Marcum)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 1 of 4)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Wet Meadow/Marsh

Legal Description: NE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This wet meadow/marsh consists of two parcels in the center of the mitigation area. The largest parcel is located 251 m (825 ft) north of Supermax Road and 83.8 m (275 ft) west of IL 127. The smaller parcel is 183 m (600 ft) north of Supermax Road and 64.8 m (213 ft) west of IL 127.

Do normal environmental conditions exist at this site? Yes: X No:

Has the vegetation, soils, or hydrology been significantly disturbed? Yes: X No:

** This site is a recently excavated depression, created for mitigation purposes.*

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. <i>Echinochloa muricata</i>	OBL	herb
2. <i>Eleocharis obtusa</i>	OBL	herb
3. <i>Typha latifolia</i>	OBL	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%

Hydrophytic vegetation: Yes: X No:

Rationale: Greater than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Cape silty clay

On Alexander County hydric soils list? Yes: X No:

Is the soil a histosol? Yes: No: X Histic epipedon present? Yes: No: X

Redox concentrations: Yes: X No: Redox depletions: Yes: X No:

Matrix color: 2.5Y 5/2

Other indicators: This soil is found in a depressional area.

Note: At least one foot of the topsoil has been excavated at this site in order to lower this area.

Hydric soils: Yes: X No:

Rationale: The Natural Resources Conservation Service classifies Cape silty clay as having aquic conditions. This soil has iron masses and an iron depleted matrix. These characteristics are evidence of a hydric soil.

ROUTINE ON-SITE WETLAND DETERMINATION

Site #2 (page 2 of 4)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Wet Meadow/Marsh

Legal Description: NE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This wet meadow/marsh consists of two parcels in the center of the mitigation area. The largest parcel is located 251 m (825 ft) north of Supermax Road and 83.8 m (275 ft) west of IL 127. The smaller parcel is 183 m (600 ft) north of Supermax Road and 64.8 m (213 ft) west of IL 127.

HYDROLOGY

Inundated: Yes: No: X **Depth of standing water:** NA

Depth to saturated soil: 0 to 1.02 m (0 to 40 in)

Overview of hydrological flow through the system: This site is located in an excavated depression. Water enters this site via precipitation and sheet flow from adjacent higher ground. Water leaves the site primarily through soil infiltration and evapotranspiration. Some water may also leave through sheet flow to the south.

Size of watershed: Less than 2.59 km² (1 mi²).

Other field evidence observed: This site has been excavated to hold water for longer periods. Bare areas indicating some ponded water, saturated soil, algal mats, mud cracks, and blackened leaves were observed at this site.

Wetland hydrology: Yes: X No:

Rationale: A depressional landscape position and field evidence of saturation and inundation suggest that this site is saturated long enough during the growing season to meet the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the site a wetland?
Rationale for decision:

Yes: X No:

Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are all present; therefore, this site is a wetland. The National Wetland Inventory does not code this site as a wetland.

Determined by: Paul Marcum, Rick Larimore, Dave Ketzner (vegetation and hydrology)
Dennis Keene (soils and hydrology)
Brad Zercher (GPS, GIS and hydrology)
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ROUTINE ON-SITE WETLAND DETERMINATION

Site #2 (page 3 of 4)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Wet Meadow/Marsh

Legal Description: NE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This wet meadow/marsh consists of two parcels in the center of the mitigation area. The largest parcel is located 251 m (825 ft) north of Supermax Road and 83.8 m (275 ft) west of IL 127. The smaller parcel is 183 m (600 ft) north of Supermax Road and 64.8 m (213 ft) west of IL 127.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Acer negundo</i>	box elder	herb	FACW-	1
<i>Alisma plantago-aquatica</i>	broad-leaf water-plantain	herb	OBL	2
<i>Alopecurus carolinianus</i>	annual foxtail	herb	FACW	0
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Ammannia coccinea</i>	long-leaved ammannia	herb	OBL	5
<i>Aster ontarionis</i>	Ontario aster	herb	FAC	4
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Aster vimineus</i>	frost flower	herb	FACW-	3
<i>Boltonia asteroides</i>	false aster	herb	FACW	5
<i>Campsis radicans</i>	trumpet creeper	herb	FAC	2
<i>Cardamine pensylvanica</i>	bitter cress	herb	FACW+	3
<i>Carex lurida</i>	bottlebrush sedge	herb	OBL	7
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	3
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eclipta prostrata</i>	yerba de tajo	herb	FACW	2
<i>Eleocharis obtusa</i>	blunt spike rush	herb	OBL	2
<i>Eupatorium perfoliatum</i>	common boneset	herb	FACW+	4
<i>Ipomoea hederacea</i>	ivy-leaved morning glory	herb	FAC	*
<i>Ipomoea lacunosa</i>	small white morning glory	herb	FACW	1
<i>Iva annua</i>	marsh elder	herb	FAC	0
<i>Juncus acuminatus</i>	knotty-leaved rush	herb	OBL	4
<i>Juncus diffusissimus</i>	slimpod rush	herb	FACW	7
<i>Juncus effusus solutus</i>	common rush	herb	OBL	4
<i>Juncus interior</i>	inland rush	herb	FAC+	3
<i>Juncus torreyi</i>	Torrey's rush	herb	FACW	3
<i>Juncus sp.</i>	rush	herb	----	--
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site #2 (page 4 of 4)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Wet Meadow/Marsh

Legal Description: NE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This wet meadow/marsh consists of two parcels in the center of the mitigation area. The largest parcel is located 251 m (825 ft) north of Supermax Road and 83.8 m (275 ft) west of IL 127. The smaller parcel is 183 m (600 ft) north of Supermax Road and 64.8 m (213 ft) west of IL 127.

SPECIES LIST (continued)

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Ludwigia polycarpa</i>	false loosestrife	herb	OBL	5
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Polygonum lapathifolium</i>	curttop lady's thumb	herb	FACW+	0
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Ranunculus sceleratus</i>	cursed crowfoot	herb	OBL	3
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Senecio glabellus</i>	butterweed	herb	OBL	0
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Setaria glauca</i>	pigeon grass	herb	FAC	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Trifolium hybridum</i>	Alsike clover	herb	FAC-	*
<i>Typha latifolia</i>	cattail	herb	OBL	1
<i>Veronica peregrina</i>	purslane speedwell	herb	FACW+	0
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

♦ Coefficient of Conservatism (Taft *et al.* 1997)

*Non-native species

$$\text{mean C value (mCv)} = \sum C/N = 89/39 = 2.3$$

$$\text{FQI} = \text{mCv}/(\sqrt{N}) = 89/(\sqrt{39}) = 14.3$$

ROUTINE ON-SITE WETLAND DETERMINATION

Site #3 (page 1 of 4)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond w/fringe

Legal Description: SE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This emergent pond w/fringe is located in the southeast corner of the mitigation area. The site begins approximately 7.6 m (25 ft) north of Supermax Road and 7.6 m (25 ft) west of IL 127.

Do normal environmental conditions exist at this site? Yes: X No:

Has the vegetation, soils, or hydrology been significantly disturbed? Yes: X No:

** This site is a recently excavated depression, created for mitigation purposes.*

VEGETATION

Dominant Plant Species

Indicator Status

Stratum

1. *Juncus acuminatus*

OBL

herb

2. *Ludwigia peploides glabrescens*

OBL

herb

based on quantitative vegetation sampling; Table 9

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%

Hydrophytic vegetation: Yes: X No:

Rationale: Greater than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Okaw silt loam

On Alexander County hydric soils list? Yes: X No:

Is the soil a histosol? Yes: No: X Histic epipedon present? Yes: No: X

Redox concentrations: Yes: X No: Redox depletions: Yes: X No:

Matrix color: 2.5Y 5/1

Other indicators: This soil is found in a depressional area.

Note: At least one foot of the topsoil has been excavated at this site in order to lower this area.

Hydric soils: Yes: X No:

Rationale: The Natural Resources Conservation Service classifies Okaw silt loam as having aquic conditions. This soil has iron masses and an iron depleted matrix. These characteristics are evidence of a hydric soil.

ROUTINE ON-SITE WETLAND DETERMINATION

Site #3 (page 2 of 4)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond w/fringe

Legal Description: SE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This emergent pond w/fringe is located in the southeast corner of the mitigation area. The site begins approximately 7.6 m (25 ft) north of Supermax Road and 7.6 m (25 ft) west of IL 127.

HYDROLOGY

Inundated: Yes: X No: Depth of standing water: up to 0.10 m (4 in) at the time of sampling (8-25-04)

Depth to saturated soil: 0 to 1.02 m (0 to 40 in)

Overview of hydrological flow through the system: This site is located in an excavated depression. Water enters this site through precipitation and sheet flow from adjacent higher ground. Water leaves the site primarily through slow soil infiltration and evapotranspiration. Further transfer of water is possible during high water events through culverts on the south and east side of the wetland. **Size of watershed:** Less than 2.59 km² (1 mi²).

Other field evidence observed: This site has been excavated to hold water for longer periods. Areas of inundation, bare areas indicating ponded water, algal mats, mud cracks, and blackened leaves were observed at this site.

Wetland hydrology: Yes: X No:

Rationale: A depressional landscape position and field evidence of saturation and inundation suggest that this site is saturated long enough during the growing season to meet the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the site a wetland?
Rationale for decision:

Yes: X No:
Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are all present; therefore, this site is a wetland. The National Wetland Inventory does not code this site as a wetland.

Determined by: Paul Marcum, Rick Larimore, Dave Ketzner (vegetation and hydrology)
Dennis Keene (soils and hydrology)
Brad Zercher (GPS, GIS and hydrology)
Geoff Pociask and Greg Shofner (ISGS, hydrology)
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ROUTINE ON-SITE WETLAND DETERMINATION

Site #3 (page 3 of 4)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond w/fringe

Legal Description: SE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This emergent pond w/fringe is located in the southeast corner of the mitigation area. The site begins approximately 7.6 m (25 ft) north of Supermax Road and 7.6 m (25 ft) west of IL 127.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Acorus calamus</i>	sweetflag	herb	OBL	4
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Alisma plantago-aquatica</i>	broad-leaf water-plantain	herb	OBL	2
<i>Alopecurus carolinianus</i>	annual foxtail	herb	FACW	0
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ammannia coccinea</i>	long-leaved ammannia	herb	OBL	5
<i>Aster ontarionis</i>	Ontario aster	herb	FAC	4
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Aster vimineus</i>	frost flower	herb	FACW-	3
<i>Boltonia asteroides</i>	false aster	herb	FACW	5
<i>Cardamine pensylvanica</i>	bitter cress	herb	FACW+	3
<i>Cicuta maculata</i>	water hemlock	herb	OBL	4
<i>Cyperus ovularis</i>	hedgehog club rush	herb	FAC	2
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eclipta prostrata</i>	yerba de tajo	herb	FACW	2
<i>Eleocharis obtusa</i>	blunt spike rush	herb	OBL	2
<i>Glyceria striata</i>	fowl manna grass	herb	OBL	4
<i>Gratiola virginiana</i>	round-fruited hedge hyssop	herb	OBL	5
<i>Iris shrevei</i>	southern blue flag	herb	OBL	5
<i>Iva annua</i>	marsh elder	herb	FAC	0
<i>Juncus acuminatus</i>	knotty-leaved rush	herb	OBL	4
<i>Juncus effusus solutus</i>	common rush	herb	OBL	4
<i>Juncus interior</i>	inland rush	herb	FAC+	3
<i>Juncus torreyi</i>	Torrey's rush	herb	FACW	3
<i>Juncus sp.</i>	rush	herb	----	--
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Ludwigia alternifolia</i>	seedbox	herb	OBL	5
<i>Ludwigia peploides glabrescens</i>	creeping primrose willow	herb	OBL	5
<i>Ludwigia polycarpa</i>	false loosestrife	herb	OBL	5
<i>Mollugo verticillata</i>	carpetweed	herb	FAC	*

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site #3 (page 4 of 4)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond w/fringe

Legal Description: SE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This emergent pond w/fringe is located in the southeast corner of the mitigation area. The site begins approximately 7.6 m (25 ft) north of Supermax Road and 7.6 m (25 ft) west of IL 127.

SPECIES LIST (continued)

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Myosurus minimus</i>	mousetail	herb	FACW	0
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Pluchea camphorata</i>	camphor weed	herb	FACW	7
<i>Polygonum hydropiperoides</i>	mild water pepper	herb	OBL	4
<i>Polygonum lapathifolium</i>	currtop lady's thumb	herb	FACW+	0
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Pontederia cordata</i>	pickerelweed	herb	OBL	8
<i>Ranunculus abortivus</i>	little-leaf buttercup	herb	FACW-	1
<i>Ranunculus sceleratus</i>	cursed crowfoot	herb	OBL	3
<i>Rorippa islandica</i>	marsh yellow cress	herb	OBL	4
<i>Rorippa sessiliflora</i>	sessile-flowered cress	herb	OBL	3
<i>Rotala ramosior</i>	tooth-cup	herb	OBL	4
<i>Rumex altissimus</i>	pale dock	herb	FACW-	2
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Sagittaria latifolia</i>	arrowhead	herb	OBL	4
<i>Salix nigra</i>	black willow	shrub, herb	OBL	3
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Scirpus cyperinus</i>	wool-grass	herb	OBL	5
<i>Senecio glabellus</i>	butterweed	herb	OBL	0
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Sida spinosa</i>	prickly sida	herb	FACU	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Trifolium hybridum</i>	Alsike clover	herb	FAC-	*
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Typha latifolia</i>	cattail	herb	OBL	1
<i>Veronica peregrina</i>	purslane speedwell	herb	FACW+	0
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

♦ Coefficient of Conservatism (Taft *et al.* 1997)

*Non-native species

$$\text{mean C value (mCv)} = \sum C/N = 143/51 = 2.8$$

$$\text{FQI} = \text{mCv}/(\sqrt{N}) = 143/(\sqrt{51}) = 20.0$$

ROUTINE ON-SITE WETLAND DETERMINATION

Site #4 (page 1 of 4)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Shrubland (proposed floodplain forest)

Legal Description: E1/2, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This shrubland is located along the west boundary of the mitigation area. It extends from approximately 7.6 m (25 ft) to 320.0 m (1050 ft) north of Supermax Road.

Do normal environmental conditions exist at this site?

Yes: X No:

Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species

Indicator Status

Stratum

1. *Quercus bicolor*

planted

sapling/shrub

2. *Quercus macrocarpa*

planted

sapling/shrub

3. *Quercus palustris*

planted

sapling/shrub

4. *Agrostis alba*

FACW

herb

5. *Elymus canadensis*

FAC-

herb

6. *Setaria faberi*

FACU+

herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 33%

Hydrophytic vegetation: Yes: No: X

Rationale: Less than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Undetermined

On Alexander County hydric soils list? Undetermined

Is the soil a histosol? Yes: No: X Histic epipedon present? Yes: No: X

Redox concentrations: Yes: X No: Redox depletions: In some areas

Matrix color: 10YR 4/3, 2.5Y 6/2

Other indicators: None

Hydric soils: Undetermined

Rationale: This area varies between being hydric and non-hydric. Furthermore, this site seems to slope towards the lower areas. This site will be monitored and rechecked next year.

ROUTINE ON-SITE WETLAND DETERMINATION

Site #4 (page 2 of 4)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Shrubland (proposed floodplain forest)

Legal Description: E1/2, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This shrubland is located along the west boundary of the mitigation area. It extends from approximately 7.6 m (25 ft) to 320.0 m (1050 ft) north of Supermax Road.

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: NA

Depth to saturated soil: > 1.27 m (> 50 in)

Overview of hydrological flow through the system: This site is at a slightly to noticeably higher elevation than Sites 2 and 3. It is level to slightly sloping towards the lower ground. Water enters this site through precipitation and leaves quickly as sheet flow to Sites 2 and 3.

Size of watershed: Less than 2.59 km² (1 mi²).

Other field evidence observed: none

Wetland hydrology: Yes: No: X

Rationale: Field observations suggest that this site is both too high of elevation and too sloping to satisfy the wetland hydrology criterion. In our opinion, the site is not saturated long enough during the growing season to meet the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the site a wetland?
Rationale for decision:

Yes: No: X

Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are all absent; therefore, this site is not a wetland. The National Wetland Inventory does not code this site as a wetland.

Determined by: Paul Marcum, Rick Larimore, Dave Ketzner (vegetation and hydrology)
Dennis Keene (soils and hydrology)
Brad Zercher (GPS, GIS and hydrology)
Geoff Pociask and Greg Shofner (ISGS, hydrology)
Illinois Natural History Survey
Center for Wildlife Ecology
607 East Peabody Drive
Champaign, Illinois 61820
(217) 333-8459 (Marcum)

ROUTINE ON-SITE WETLAND DETERMINATION

Site #4 (page 3 of 4)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Shrubland (proposed floodplain forest)

Legal Description: E1/2, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This shrubland is located along the west boundary of the mitigation area. It extends from approximately 7.6 m (25 ft) to 320.0 m (1050 ft) north of Supermax Road.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Acalypha rhomboidea</i>	three-seeded mercury	herb	FACU	0
<i>Acer negundo</i>	box elder	herb	FACW-	1
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	2
<i>Artemisia vulgaris</i>	common mugwort	herb	UPL	*
<i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Aster vimineus</i>	frost flower	herb	FACW-	3
<i>Barbarea vulgaris</i>	winter cress	herb	FAC	*
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Campsis radicans</i>	trumpet creeper	shrub, herb	FAC	2
<i>Chamaesyce maculata</i>	nodding spurge	herb	FACU-	0
<i>Cirsium discolor</i>	pasture thistle	herb	UPL	3
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Daucus carota</i>	Queen Anne's lace	herb	UPL	*
<i>Elymus canadensis</i>	Canada wild rye	herb	FAC-	4
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
♣ <i>Fraxinus pennsylvanica</i>	green ash	sapling/shrub	FACW	2
<i>Ipomoea hederacea</i>	ivy-leaved morning glory	herb	FAC	*
<i>Ipomoea lacunosa</i>	small white morning-glory	herb	FACW	1
<i>Iva annua</i>	marsh elder	herb	FAC	0
<i>Kummerowia striata</i>	Japanese lespedeza	herb	FACU	*
<i>Lespedeza cuneata</i>	sericea lespedeza	herb	NI	*
♣ <i>Liquidambar styraciflua</i>	sweet gum	sapling/shrub	FACW	6
<i>Lolium perenne</i>	crested rye grass	herb	FACU	*
<i>Panicum virgatum</i>	prairie switchgrass	herb	FAC+	4
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Plantago lanceolata</i>	narrow-leaved plantain	herb	FAC	*

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site #4 (page 4 of 4)

Field Investigators: Marcum, Keene, Larimore, Ketzner, and Zercher

Date: 15 April, 25 August, and 14 October, 2004 **Project Name:** FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Shrubland (proposed floodplain forest)

Legal Description: E1/2, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This shrubland is located along the west boundary of the mitigation area. It extends from approximately 7.6 m (25 ft) to 320.0 m (1050 ft) north of Supermax Road.

SPECIES LIST (continued)

Scientific name	Common name	Stratum	Wetland indicator status	C ♦
♣ <i>Platanus occidentalis</i>	sycamore	sapling/shrub	FACW	3
<i>Polygonum lapathifolium</i>	curttop lady's thumb	herb	FACW+	0
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
♣ <i>Quercus bicolor</i>	swamp white oak	sapling/shrub	FACW+	7
♣ <i>Quercus macrocarpa</i>	burr oak	sapling/shrub	FAC-	5
♣ <i>Quercus palustris</i>	pin oak	sapling/shrub	FACW	4
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Setaria glauca</i>	pigeon grass	herb	FAC	*
<i>Sida spinosa</i>	prickly sida	herb	FACU	*
<i>Solanum carolinense</i>	horse nettle	herb	FACU-	0
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Sorghum halepense</i>	Johnson grass	herb	FACU	*
<i>Trifolium hybridum</i>	Alsike clover	herb	FAC-	*
<i>Trifolium pratense</i>	red clover	herb	FACU+	*
<i>Verbena urticifolia</i>	white vervain	herb	FAC+	3
<i>Vicia villosa</i>	winter vetch	herb	UPL	*
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

♦ Coefficient of Conservatism (Taft *et al.* 1997)

♣ denotes planted species

*Non-native species

without planted species:

mean C value (mCv) = $\sum C/N = 37/26 = 1.4$

FQI = $mCv/(\sqrt{N}) = 37/(\sqrt{26}) = 7.3$

with planted species:

mean C value (mCv) = $\sum C/N = 64/32 = 2.0$

FQI = $mCv/(\sqrt{N}) = 64/(\sqrt{32}) = 11.3$

Appendix 3. Photos of wetland creation sites



Photo 1. View of the east half of Site 1, emergent pond/wet meadow, from the south end (at the V). The trees to the left of the picture are on the peninsula between the east and west half of Site 1.



Photo 2. View of the west half of Site 1, emergent pond/wet meadow, looking toward the north. The trees to the right of the picture are on the peninsula between the east and west half of Site 1.



Photo 3. View of the east side of Site 1, emergent pond/wet meadow, looking south from the north end. The trees to the right of the picture are on the peninsula between the east and west half of Site 1.



Photo 4. View of Site 2, wet meadow/marsh, looking south toward Supermax Road. Note the planted tree on the right side of the photo.



Photo 5. View of Site 3, the emergent pond w/fringe, from the culvert at Supermax Road looking to the north. IL 127 is barely visible at the right edge of the photo.